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The Barrel TOF detector for $\bar{\text{P}}\text{ANDA}$

The $\bar{\text{P}}\text{ANDA}$ experiment addresses fundamental questions in hadron and nuclear physics via interactions of antiprotons with nucleus / nuclei. The experiment is currently under construction at the Facility for Antiproton and Ion Research (FAIR) in Darmstadt, Germany. The High Energy Storage Ring will provide an antiproton beam with a momentum range of 1.5 –15 GeV/c and an average collision rate on the fixed target of 20 MHz is envisaged.

The barrel-shaped scintillator tile hodoscope, covering the central region of the detector, plays a crucial role in determining the time origin of the track. An online data reduction of factor ~ 1000 is necessary where the timing information of the scintillator tile hodoscope will be one of the key components.

The detector provides particle identification for slow particles below 700 MeV/c. In order to achieve this goal, plastic scintillator tiles with minimum material budget read out by Silicon Photomultiplier (SiPM) have been selected and the time resolution will be < 100 ps. In this presentation, an overview of the current development status with a particular focus on Monte Carlo based simulation studies will be given.

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Track Classification: Detector R&D and Data Handling